BIO - RETENTION SPECIFICATIONS - SOIL

A. PLANTING SOIL

THE BIORETENTION AREAS SHALL CONSIST OF A PLANTING SOIL HAVING A COMPOSITION OF AT LEAST 10 TO 15 PERCENT CLAY AND SHALL BE OF A SANDY LOAM OR LOAMY SAND TEXTURE. LOAMY SOILS MAY BE UTILIZED FOR THE PLANTING SOIL BUT MUST CONSIST OF 45 PERCENT SAND. IN ADDITION, THE FURNISHED PLATING SOIL SHALL BE OF UNIFORM COMPOSITION, FREE OF STONES, STUMPS, ROOTS OR SIMILAR OBJECTS LARGER THAN ONE INCH, BRUSH, OR ANY OTHER MATERIAL OR SUBSTANCE WHICH MAY BE HARMFUL TO PLANT GROWTH, OR A HINDRANCE TO PLANTING OR MAINTENANCE OPERATIONS.

THE PLANTING SOIL SHALL BE FREE OF PLANTS OR PLANT PARTS OF BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, MUGWART, MUTSEDGE, POISON IVY, CANADIAN THISTLE OR OTHERS AS SPECIFIED.

IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH.

THE PLANTING SOIL SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA:

pH RANGE	5.5-6.5
ORGANIC MATTER	1.5-3.0 %
MAGNESIUM - Mg	35LBS. / ACRE
PHOSPHORUS - P2 O5	100LBS. / ACRE
POTASSIUM - K2 O	85LBS. / ACRE
SOLUBLE SALTS	NOT TO EXCEDE 500 PPM

THE FOLLOWING TESTING FREQUENCIES SHALL APPLY TO THE ABOVE SOIL CONSTITUENTS:

PH, ORGANIC MATTER: 1 TEST PER 90 CUBIC YARDS, BUT NO MORE THAN 1 TEST PER BIORETENTION AREA.

MAGNESIUM, PHOSPHORUS, POTASSIUM, SOLUBLE SALTS: 1 TEST PER 500 CUBIC YARDS, BUT NO SESS THAN 1 TEST PER BORROW SOURCE.

ONE GRAIN SIZE ANALYSIS SHALL BE PERFORMED PER 90 CUBIC YARDS OF PLANTING SOIL, BUT NO LESS THAN 1 TEST PER BIORETENTION AREA.

B. MULCH LAYER SPECIFICATIONS

A MULCH LAYER SHALL BE PROVIDED ON TOP OF THE PLANTING SOIL. AN ACCEPTABLE MULCH LAYER SHALL INCLUDE SHREDDED HARDWOOD OR SHREDDED WOOD CHIPS OR OTHER SIMILAR MATERIAL.

OF THE AOPPROVED MULCH PRODUCTS, ALL MUST BE WELL AGED, UNIFORM IN COLOR, AND FREE OF FOREIGN MATERIAL INCLUDING PLANT MATERIAL. WELL-AGED MULCH IS DEFINED AS MULCH THAT HAS BEEN STOCKPILED OR STORED FOR AT LEASE (12) MONTHS.

C. SAND SPECIFICAIONS

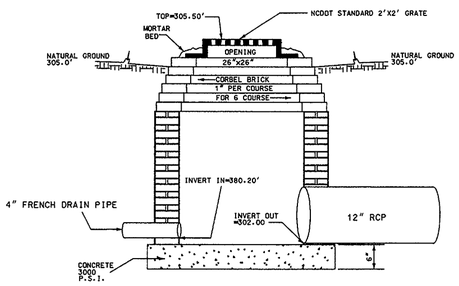
THE SAND SHALL BE FREE OF DELETERIOUS MATERIAL AND ROCKS GREATER THAN 1 INCH IN DIAMETER.

D. COMPACTION

SOIL SHALL BE PLACED IN LAYERS LESS THAN 18 INCHES AND LIGHTLY COMPACTED (MINIMAL COMPACTIVE EFFORT) BY TAMPING WITH A BUCKET FROM A DOZER OR A BACKHOE.

OPTIONAL PLANTING SOIL MIXTURE

THE CONTRACTOR MAY SUBSTITUTE 'SIFTED' TOPSOIL FOR THE ABOVE SPECIFIED SOIL MIXTURE UPON WRITTEN APPROVAL BY THE OWNER'S REPRESENTATIVE. THE SUBSTITUTE SOIL MIXTURE SHOULD CONTAIN NO MORE THAN 15% CLAY FRACTION. THE CONTRACTOR SHALL HAVE THE SOIL SUBSTITUTE APPROVED PRIOR TO DELIVERY AND /OR INSTALLATION.



SECTION

NOTES:
EITHER SOLID BRICK, SOLID BLOCK OR PRECAST CONCRETE MAY BE USED.

FOR 24" R.C.P. AND LARGER USE PIPE DIA. PLUS 12" FOR MINIMUM INSIDE DIMENSION.

GRATED INLETS SHALL NOT BE USED WITHIN TRAVEL AREAS. STANDARD STEPS REQUIRED @ 16" O.C. WHERE DEPTH EXCEEDS 3'.

BIORETENTION OVERFLOW INLET

BIO - RETENTION SPECIFICATIONS - PLANTS

GENERAL PLANTING SPECIFICATIONS

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT FROM THE SOURCE TO THE JOB SITE AND UNTIL PLANTED.

WALLS OF PLANTING SHALL BE DUG SO THAT THEY ARE VERTICAL.

THE DIAMETER OF THE PLANTING PIT MUST BE A MINIMUM OF SIX INCHES (6') OR LARGER THAN THE DIAMETTER OF THE BALL OF THE TREE.

THE PLANTING PIT SHALL BE DEEP ENOUGH TO ALLOW 1/4" OF THE BALL TO BE ABOVE THE EXISTING GRADE. LOOSE SOIL AT THE BOTTOM OF THE PIT TO BE TAMPED BY HAND

THE APPROPRIATE AMOUNT OF FERTILIZER IS TO BE PLACED AT THE BOTTOM OF THE PIT (SEE BELOW FOR FERTILIZATION RATES)

THE PLANT SHALL BE REMOVED FROM THE CONTAINER AND PLACED INTO THE PLANTING PIT BY LIFTING AND CARRYING THE PLANT BY ITS' BALL (NEVER LIFT BY BRANCHES OR TRUNK).

SET THE PLANT UPRIGHT AND IN THE CENTER OF THE PIT SO THAT THE TOP OF THE BALL IS APPROXIMATELY 1/4" ABOVE THE FIWAL GRADE.

BACKFILL PLANTING PIT WITH EXISTING SOIL.

MAKE SURE PLANT REMAINS STRAIGHT DURING BACKFILLING PROCEDURE.

NEVER COVER THE TOP OF THE BALL WITH SOIL. MOUND SOIL AROUND THE EXPOSED BALL (1/4").

TREES SHALL BE BRACED BY USING 2" BY 2" WHITE OAK STAKES. SHALL BE PLACED PARALLEL TO WALKWAYS AND BUILDINGS. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. UTILIZING HOSE AND WIRE, THE TREE IS BRACED TO THE STAKES.

FERTILIZATION

TREE AND SHRUB FERTILIZER SHALL BE A 21-GM, TIGHTLY COMPRESSED, LONG LASTING, SLOW RELEASE (2 YEAR) FERTILIZER TABLET WITH A MINIMUM GUARANTEED ANALYSIS OF 20 - 10 - 5:

TOTAL NITROGEN: (N) - 20%

WATER SOLUBLE ORGANIC NITROGEN - 7%

WATER INSOULBLE ORGANIC NITROGEN - 13%

AVAILABLE PHOSPHORIC ACID (P2 O5) - 10%

SOLUBLE POTASH (K2 O) - 5%

FOR CONTAINERIZED TREES AND SHRUBS, PLACE THE SPECIFIED FERTILIZER TABLET(S) IN THE BOTTOM OF THE PLANTING PIT ACCORDING TO THE FOLLOWING RATES

1. GAL. CONTAINER	1. EA. 21 GM. TABLETS
3. GAL. CONTAINER	2 . EA. 21 GM TABLETS
5. GAL. CONTAINER	3. EA. 21 GM TABLETS
7. GAL. CONTAINER	4. EA. 21 GM TABLETS:

PLANTING NON - GRASS GROUND COVER

THE GROUND COVER PLANTING HOLES SHALL BE DUG THROUGH THE MULCH WITH ONE OF THE FOLLOWING: HAND TROWEL, SHOVEL, BULB PLANTER, OR HOE (THIS DOES NOT APPLY TO GRASSES OR LEGUMES)

BEFORE PLANTING, BIODEGRADABLE POTS SHALL BE SPLIT, AND NON - BIODEGRADABLE POTS SHALL BE REMOVED. ROOT SYSTEMS OF ALL POTTED PLANTS SHALL BE SPLIT OR CURMBLED.

THE GROUND COVER SHAL BE PLANTED SO THAT THE ROOTS ARE SURROUNDED BUY THE SOIL BELOW THE MULCH. POTTED PLANTS SHALL BE COVERED TO THE CROWN.

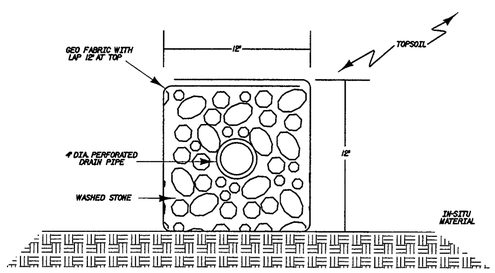
BEFORE PLANTING, APPLY A PRE-EMERGENT HERBICIDE TO THE MULCHED AND PLANTED GROUND COVER BED.

THE ENTIRE GROUND COVER BED SHALL BE THOROUGHLY WATERED.

PLANTING GRASS GROUND COVER

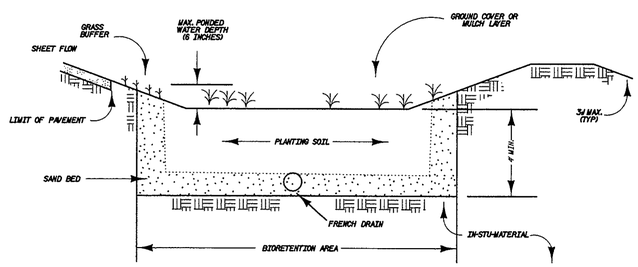
GRASSES AND LEGUME SEED SHALL BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST 2 INCHES BY EITHER HARROWING OR DISCING. FERTILIZER SHALL BE APPLIED AT THE SAME RATE AND UTILIZING THE SAME PROCESS FOR NON - GRASS GROUND COVER. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON - GRASS GROUND COVER PLANTING TECHNIQUES.

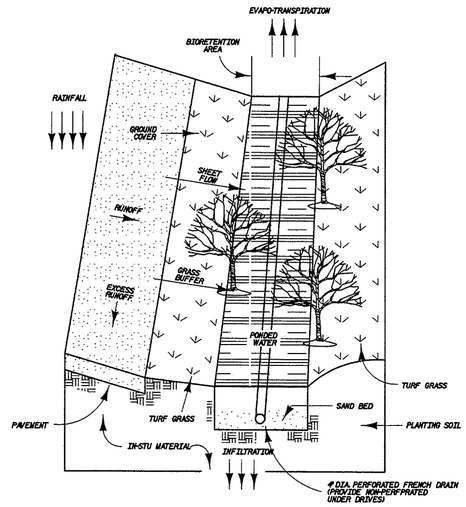
ALL GROUND COVERS SHALL BE FERTILIZED WITH A 10 - 6 - 4 ANALYSIS FERTILIZER AS A WET APPLICATION AT THE RATE OF 3 LBS. PER 100 SQUARE FEET OF THE BIORETENTION AREA PRIOR TO PLANTING NON - GRASS COVER OR AS PART OF THE GRASS SEED GROUND COVER.

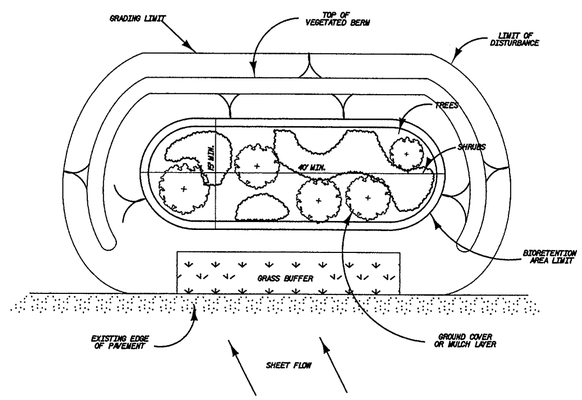


BIORETENTION AREA FRENCH DRAIN SECTION AND DETAIL

BIO - RETENTION DETAILS







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Environmental Protection Agency
National Computer Center
Research Triangle Park, North Carolina

No.	Revision	Date
1	STORMWATER & GRADING	9-11-00
2	EPA	10-10-00

FINAL PLANS

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